

# AI GENERATED WORK SCHEDULES by TapirSolutions

## ◆ GOAL

Automatically generate complex work schedules based on your company's needs and your workers' preferences.

## ◆ ADVANTAGES

### QUALITY

Avoids contract violations, leads to higher worker satisfaction.

### EFFICIENCY

Eliminates scheduling effort, reduces administrative work.

### OBJECTIVITY

Removes human bias, enhances fairness among workers.

## ◆ HOW DOES IT WORK?

### INPUT DATA

The necessary data, such as shift information and working contracts, are gathered.

### GREEDY SCHEDULE

A first, non-optimized, schedule draft is generated in a greedy way.

### ENSURE VALIDITY

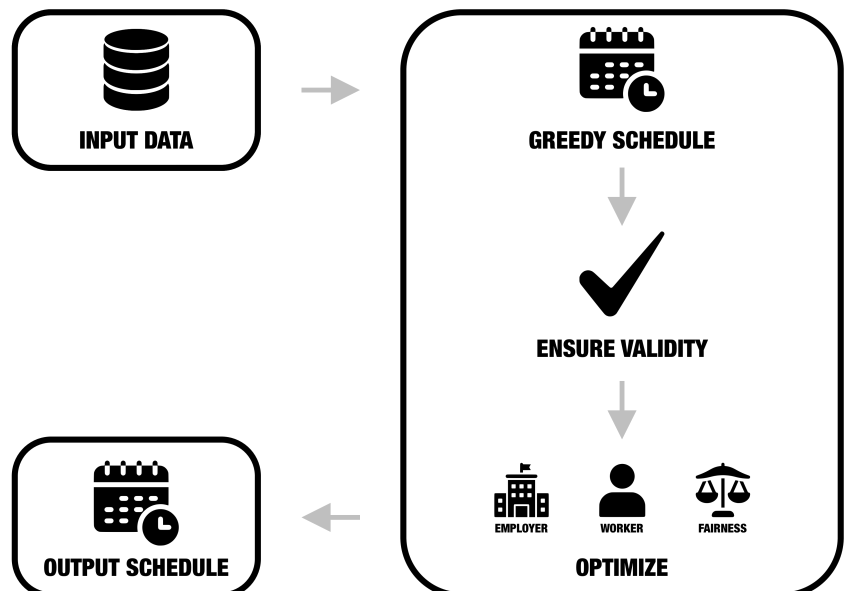
It is ensured that all hard constraints, such as legal restrictions, are respected.

### OPTIMIZE

Improvements, based on the employer's and worker's needs, as well as the fairness among workers, are made.

### OUTPUT SCHEDULE

The final schedule is either exported as a file or directly sourced back into your management software.



## ◆ IS IT ADJUSTABLE TO MY COMPANY'S NEEDS?

Yes, with various features for scheduling rules, manpower requirements, qualification constraints, and more (see attached list of all 26 features), our scheduling software is able to create a work schedule based on your company's needs.

## ◆ NEXT STEPS

We want to offer you a free testing period of three months, to determine if our scheduling software meets your company's expectations. If interested, we would like to schedule a meeting to discuss further details.

Thank you in advance.

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## ◆ GENERAL FEATURES

### 01. BLOCKED DAYS

Mark certain days as blocked for individual workers, so that they cannot be used to schedule shifts.

*Tom requested some time off and is therefore not assigned any shifts on these exact days.*

### 02. CALENDAR INTEGRATION

Import schedule automatically into workers' personal calendars.

*Detailed shift information (start, end, location) shows up on Tom's iPhone Calendar app.*

### 03. MONTH-TO-MONTH TRANSITIONS

Generate schedules that allow smooth and logical transitions between consecutive months.

*To retain his working rhythm, Tom ends July and starts August with the same morning shift.*

### 04. OVERTIME CONSTRAINTS

Control the maximum difference between the ideal and scheduled number of hours in a month for every worker.

*Every month, Tom's scheduled hours are guaranteed to not exceed or fall short by more than 10%.*

### 05. WORKER SCHEDULE FAIRNESS

Even out the quality of schedules across workers over time.

*This month's schedule makes up for Tom's last schedule, which was a bit less favorable than the one of his colleagues.*

## ◆ SHIFT FEATURES

### 06. ASSIGNMENT

Restrict the number of workers that can be assigned to individual shifts.

*At least 4, but not more than 6 workers should be assigned to the Monday morning shift.*

### 07. ASSIGNMENT IN GROUPS

Group shifts together, to restrict the number of workers on a multi-shift level.

*In total, at least 8, ideally 9, but not more than 10, workers should be assigned to the Monday morning and afternoon shifts.*

### 08. BANNING

Create a banned set of shifts which specific workers are not allowed to work.

*Tom is not allowed to work shifts shorter than 7 hours.*

### 09. BREAK MINIMUM

Define the minimum required break duration after every shift in the schedule.

*Tom is guaranteed to rest for 14 hours after every shift that he works.*

### 10. PLANNING

Plan which shifts exist and when they take place, according to weekdays and/or calendar days.

*Compared to a usual day, the plan for January 1st is to have fewer shifts, featuring a reduced number of workers.*

### 11. PRESCHEDULING

Preschedule shifts for specific workers on specific days.

*Before starting the schedule generation, it has been decided that Tom is prescheduled to work the morning shift on August 14.*

### 12. STREAK LIMIT

Limit how many days a worker can work consecutively.

*After having worked a shift for 5 consecutive days, Tom is guaranteed to have a day off.*

### 13. TYPES

Cluster shifts with similar characteristics into types to allow a more organized schedule.

*Tom works in different morning shifts, with different starting and ending times, which can all be considered to be the same shift type.*

### 14. TYPE PREFERENCES

Indicate shift type preferences on a per worker basis.

*The schedule tries to respect that Tom likes to work in the morning, is indifferent to night shifts, but hates going to work in the afternoon.*

## ◆ BLOCK FEATURES

### 15. BLOCKS

Schedule shifts of the same type on consecutive days to create a more consistent working rhythm.

*Tom's week is composed of 1 block of 3 consecutive night shifts.*

### 16. BREAK MINIMUM

Define the minimum required break duration after a block of every type.

*Tom is guaranteed to rest for 40 hours after having worked a block of night shifts.*

### 17. LENGTH LIMIT

Limit the number of days for blocks of every type.

*Tom is guaranteed to work night blocks of at least 2 and maximum 4 days.*

### 18. LENGTH PREFERENCES

Indicate the preferred number of days for blocks of every shift type for every worker.

*The schedule tries to respect that Tom prefers to work night blocks of precisely 3 days.*

## ◆ ADVANCED FEATURES

### 19. EMPLOYER/WORKERS BALANCE

Decide on an optimization balance in terms of schedule quality for the employer vs. quality for the workers.

*Assigning the ideal number of workers to shifts (benefits employer) can be set to be slightly more important than the workers' preferences (benefits workers).*

### 20. MULTI-TEAM INTERACTIONS

Establish schedule constraints that span across multiple teams.

*Considering both of their Monday morning shifts, the marketing and sales teams require a combined minimum of 7 workers to be assigned, no-matter the distribution.*

### 21. OVERTIME REDUCTION

Determine which workers should have their accumulated overtime reduced.

*Since Tom has a large overtime balance, he is scheduled a "time-off shift" where he does not need to actually go to work.*

### 22. PERIODIC BREAK

Define a work duration, a periodic break duration, and a maximum number of violations per month.

*After 5 days of consecutive work, Tom is generally guaranteed a break of at least 48 hours, knowing that a maximum of 1 periodic break violation per month is tolerated.*

### 23. QUALIFICATION REQUIREMENTS

Set qualification criteria for workers in specific shifts.

*Precisely 1 doctor, next to a variable amount of nurses, is required for the Monday morning shift.*

### 24. SHIFTS PER MONTH

Decide on a monthly limit for the number of shifts that can be scheduled for every type for every worker.

*Tom is guaranteed to not work more than 3 afternoon shifts every month.*

### 25. SPECIAL SHIFTS

Schedule special shifts that don't follow the ordinary shift characteristics.

*Tom is scheduled to take part in a special morning training shift, which incorporates into a block of 3 regular morning shifts.*

### 26. WEEKDAY LINKING

Enforce certain types to be scheduled on certain consecutive weekdays.

*If Tom is scheduled to work at night on a Friday, he is guaranteed to also work at night on the following Saturday and Sunday.*